

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION
CONSTRUCTION ACTIVITIES FOR THIS PROJECT INCLUDE THE CONSTRUCTION OF 265 LINEAR FEET OF 4" AND 6" DIAMETER WATERLINE, 24,000 GALLON GROUND STORAGE TANK AND ALTITUDE VALVE VAULT, ALONG WITH THE EROSION AND SEDIMENT CONTROL DEVICES SHOWN ON THIS PLAN.
THE TOTAL DISTURBED AREA IS APPROXIMATELY 3,250 SQ. FT OR 0.07 ACRES.
EXISTING SITE CONDITIONS
THE SITE CONSISTS PRIMARILY OF FORESTED AREAS THAT SHALL BE CROSSED BY THE WATERLINE, INCLUDING GENTLY SLOPING AREAS AND A DRAINAGE DITCH AS SHOWN ON THE DRAWINGS.
EROSION AND SEDIMENT CONTROL MEASURES:
TO PRIMARILY INCLUDE THE FOLLOWING:
SILT FENCE AND CULVERT INLET PROTECTION AS INDICATED ON THE PLAN TO PROTECT RUNOFF ONTO ADJACENT PROPERTIES AND WETLAND AREAS.
UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. THESE MINIMUMS WILL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE.
PERMANENT STABILIZATION:
PERMANENT STABILIZATION SHALL BE APPLIED TO DISTURBED AREAS WITHIN SEVEN (7) DAYS AFTER COMPLETION OF CONSTRUCTION ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DISTURBED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN THIRTY (30) DAYS. DISTURBED SLOPES ALONG THE CONSTRUCTION CORRIDOR MAY REQUIRE EROSION CONTROL FABRIC TO STABILIZE THE SLOPES UNTIL VEGETATION IS ESTABLISHED. THE CONTRACTOR SHALL APPLY EROSION CONTROL FABRIC AT THE DISCRETION OF THE ENGINEER/INSPECTOR.

MINIMUM STANDARDS

- MS-1: Apply permanent soil stabilization to denuded areas within seven days after final grade is reached on any portion of the site. Apply temporary soil stabilization within seven days to denuded areas that may not be at final grade but will remain dormant (undisturbed) for longer than 30 days. Apply permanent stabilization to areas that are to be left dormant for more than one year.
- MS-2: Stabilize or protect temporary soil stockpiles with sediment trapping measures. Provide temporary protection and permanent stabilization of all soil stockpiles on site as well as soil transported from the project site.
- MS-3: Establish a permanent vegetative cover on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is in the opinion of the Architect/Engineer, is uniform, mature enough to survive and will inhibit erosion.
- MS-4: Construct sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment as a first step in any land-disturbing activity and make these measures functional before upslope land disturbance or timbering takes place.
- MS-5: Apply stabilization measures to earthen structures such as dams, dikes and diversions immediately after installation.
- MS-6: Control surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres to accommodate the anticipated sediment loading from the land-disturbing activity. The outfall device or system design shall take into account the total drainage area flowing through the disturbed area to be served by the basin.
- MS-7: Construct cut and fill slopes in a manner that will minimize erosion. Provide slopes that are found to be eroding excessively within one year of permanent stabilization with additional slope stabilizing measures until the problem is corrected.
- MS-8: Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.
- MS-9: Whenever water seeps from a slope face, provide adequate drainage or other protection.
- MS-10: Protect all storm sewer inlets that are made operable during construction so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.
- MS-11: Before stormwater conveyance channels are made operational, provide adequate outlet protection and any required temporary or permanent channel lining in both the conveyance channel and the receiving channel.
- MS-16: Underground utility lines shall be installed in accordance with these standards in addition to other applicable criteria.
- a. Open no more than 500 linear feet of trench at one time.
- b. Place excavated material on the uphill side of trenches.
- c. Filter effluent from dewatering operations or pass through an approved sediment trapping device, or both, and discharge in a manner that does not adversely affect flowing streams or offsite property.
- d. Accomplish restabilization in accordance with these regulations.
- e. Comply with all applicable safety regulations.

MS-17: Where construction vehicle access routes intersect paved public roads, make provisions to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a public road surface, clean the road thoroughly at the end of each day. Remove sediment from the roads by shoveling or sweeping and transport to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner.

MINIMUM STANDARDS (continued)

- MS-18: Remove all temporary erosion and sediment control measures within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local authority having jurisdiction. Permanently stabilize trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures to prevent further erosion and sedimentation.
- MS-19: Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria.
- a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.
- b. Adequacy of all channels and pipes shall be verified in the following manner:
- (1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question.
- (2) Natural channels shall be analyzed by the use of a two-year frequency storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.
- (3) All previously constructed man-made channels shall be analyzed by the use of a ten-year frequency storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks.
- (4) Pipes and storm sewer systems shall be analyzed by the use of a ten-year frequency storm to verify that stormwater will be contained within the pipe or system.
- c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
- (1) Improve the channels to a condition where a ten-year frequency storm will not overtop the banks and a two-year frequency storm will not cause erosion to the channel bed or banks, or
- (2) Improve the pipe or pipe system to a condition where the ten-year frequency storm is contained within the appurtenances; or
- (3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel.
- (4) Provide a combination of channel improvement, stormwater detention/retention or other measures which is satisfactory to the plan approving authority to prevent downstream erosion.
- d. The applicant shall provide evidence of permission to make the improvements.
- e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.
- f. If the applicant chooses an option that includes stormwater detention/retention, he shall obtain approval from the locality of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.
- g. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel or detention facility.
- h. In applying these stormwater management criteria, individual lots in a residential subdivision development shall not be considered to be separate development projects. Instead, the residential subdivision development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate subdivision development shall be used in all engineering calculations.
- i. Proposed commercial or industrial subdivisions shall apply these stormwater management criteria to the development as a whole. Hydrologic parameters that reflect the ultimate subdivision development shall be used in all engineering calculations.

SEEDING MIXTURES, RATES AND DATES:
COASTAL PLAIN

SITE CONDITIONS	SEEDING MIXTURES	RATES		DATES		
		PER ACRE	PER 1000 FT ²	1/5 TO 1/4	1/4 TO 1/2	1/2 TO 1
HIGH MAINTENANCE LAWNS	1. Tall fescue-50% Kentucky bluegrass-10%	250 lbs	6 lbs	X	No	X
LOW MAINTENANCE GENERAL USE	2. Tall fescue-50% Ladino clover-10% Red clover-10% Korean lespedeza-15% Annual ryegrass-15%	80 lbs	2 lbs	X	(a,b) X	X
	3. Tall fescue-50% Serotia lespedeza-30% Annual ryegrass-20%	70 lbs	1 lbs	X	(a)X	X
DROUGHTY AREAS, SANDY SOILS	4. Tall fescue-50% Serotia lespedeza-20% Korean lespedeza-15% Annual ryegrass-15%	80 lbs	2 lbs	X	(a,b) X	X
POORLY DRAINIED AREAS	5. Tall fescue-50% Korean lespedeza-20% Annual ryegrass-10% Redtop-5%	80 lbs	2 lbs	X	(a,b) X	X
a) After May 1, use 10 lb/A german millet or 2 lb/A weeping lovegrass in place of annual ryegrass. b) After May 1, Korean lespedeza will not reseed itself. You may increase the amount of other legumes accordingly.						

TABLE 3.31-C (FROM THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 1992)
TEMPORARY SEEDING PLANT MATERIALS, SEEDING RATES, AND DATES

SPECIES	SEEDING RATE		COASTAL PLAIN AREA			PLANT CHARACTERISTICS
	ACRE	1000 SQ.FT	2/15 TO 4/30	5/1 TO 9/1	9/1 TO 11/15	
OATS (Avena SATIVA)	3 BU. (UP TO 100 LBS, NOT LESS THAN 50 LBS)	2 LBS	X	-	-	USE SPRING VARIETIES (E.G. NOBLE).
RYE (SECALE CEREALE)	2 BU. (UP TO 110 LBS, NOT LESS THAN 30 LBS)	2.5 LBS	X	-	X	USE LATE FALL SEEDINGS, WINTER COVER. TOLERATES COLD AND LOW MOISTURE.
GERMAN MILLET (SETARIA ITALICA)	50 LBS	APPROX. 1 LB	-	X	-	WARM-SEASON ANNUAL. DIES AT FIRST FROST. MAY BE ADDED TO SUMMER MIXES.
ANNUAL RYEGRASS (LOLIUM MULTI-FLOSUM)	60 LBS	1.5 LBS	X	-	X	MAY BE ADDED IN MIXES. WILL MOW OUT OF MOST STANDS.
WEEDING LOVEGRASS (ERAGROSIS CURVULA)	15 LBS	5.5 OZS	-	X	-	WARM-SEASON PERENNIAL. MAY BUNCH. TOLERATES HOT, DRY SLOPES AND ACID, INFERTILE SOILS. MAY BE ADDED TO MIXES.
KOREAN LESPEDEZA (LESPEDEZA STIPULACEA)	25 LBS	APPROX. 1.5 LBS	X	X	-	WARM SEASON ANNUAL LEGUME. TOLERATES ACID SOILS. MAY BE ADDED TO MIXES.

c MAY BE USED AS A COVER CROP WITH SPRING SEEDING
d MAY BE USED AS A COVER CROP WITH FALL SEEDING
X MAY BE PLANTED BETWEEN THESE DATES
- MAY NOT BE PLANTED BETWEEN THESE DATES

LIME, FERTILIZER, AND MULCH RATE SCHEDULE

I. LIME

COASTAL PLAIN : 2 TONS / ACRE PULVERIZED AGRICULTURAL GRADE LIMESTONE (90 LBS/1000 SQ.FT.)
NOTE : AN AGRICULTURAL GRADE OF LIMESTONE SHOULD ALWAYS BE USED.

II. FERTILIZER

- MIXED GRASSES AND LEGUMES : 1000 LBS/ACRE 10-20-10 OR EQUIVALENT NUTRIENTS (23 LBS/1000 SQ.FT.)
- LEGUME STANDS ONLY : 1000 LBS/ACRE 5-20-10 (23 LBS/1000 SQ.FT.) IS PREFERRED; HOWEVER, 1000 LBS/ ACRE OF 10-20-10 OR EQUIVALENT MAY BE USED.
- GRASS STANDS ONLY : 1000LBS/ACRE 10-20-10 OR EQUIVALENT NUTRIENTS, (23 LBS/1000 SQ.FT.)

FERTILIZATION: COOL SEASON GRASSES SHOULD BEGIN TO BE FERTILIZED 90 DAYS AFTER PLANTING TO ENSURE PROPER STAND AND DENSITY. WARM SEASON FERTILIZATION SHOULD BEGIN AT 30 DAYS AFTER PLANTING.

- COOL SEASON GRASSES

4 LBS NITROGEN (N)
1 LB PHOSPHORUS (P)
2 LBS POTASH (K)

PER 1000 SQ.FT. PER YEAR

SEVENTY-FIVE PERCENT OF THE TOTAL REQUIREMENTS SHOULD BE APPLIED BETWEEN SEPTEMBER 1 AND DECEMBER 31ST. THE BALANCE SHOULD BE APPLIED DURING THE REMAINDER OF THE YEAR. MORE THAN 1 LB OF SOLUBLE NITROGEN PER 1000 SQ.FT. SHOULD NOT BE APPLIED AT ANY ONE TIME.

- WARM SEASON GRASSES

APPLY 4-5 LBS NITROGEN (N) BETWEEN MAY 1 AND AUGUST 15TH PER 1000 SQ.FT. PER YEAR. PHOSPHORUS (P) AND POTASH (K) SHOULD ONLY BE APPLIED ACCORDING TO SOIL TEST.

NOTE: THE USE OF SLOW-RELEASE FERTILIZER FORMULATIONS FOR MAINTENANCE OF TURF IS ENCOURAGED TO REDUCE THE NUMBER OF APPLICATIONS AND THE IMPACT ON GROUNDWATER.

III. MULCH

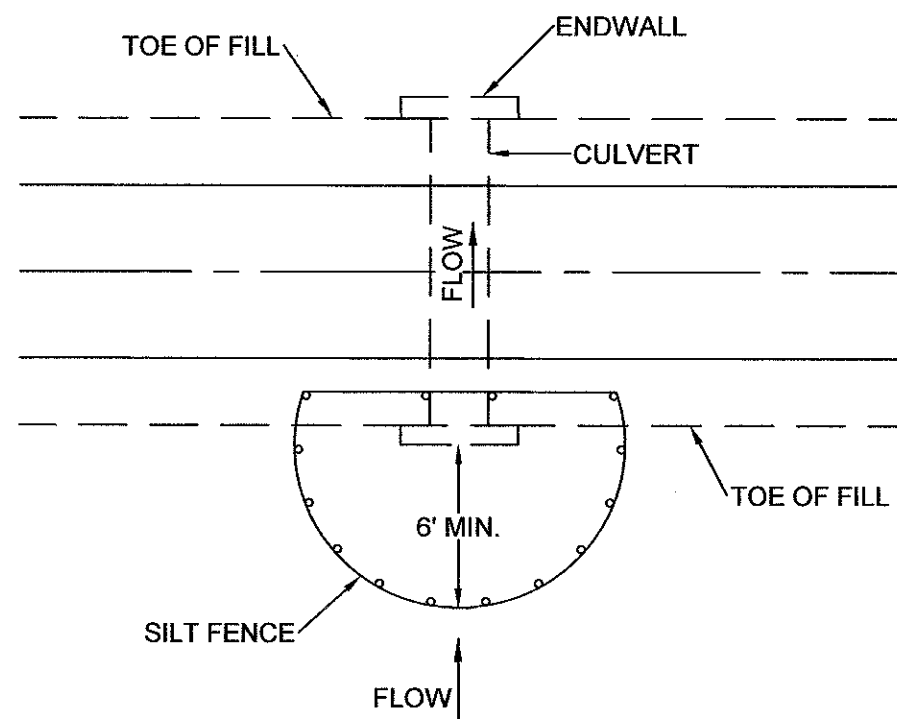
ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCH	MULCHING RATES		NOTES
	PER ACRE	PER 1000 SQ.FT	
STRAW AND HAY	1.5 - 2 TONS (MINIMUM 2 TONS FOR WINTER COVER)	70-90 LBS	FREE FROM WEEDS AND COARSE MATTER. MUST BE ANCHORED. SPREAD WITH MULCH BLOWER OR BY HAND.

EROSION CONTROL LEGEND*

- (STB) STRAW BALE BARRIER 3.04
- (SF) SILT FENCE 3.05
- (CIP) CULVERT INLET PROTECTION 3.08
- (SFB) SILT FENCE BREAK

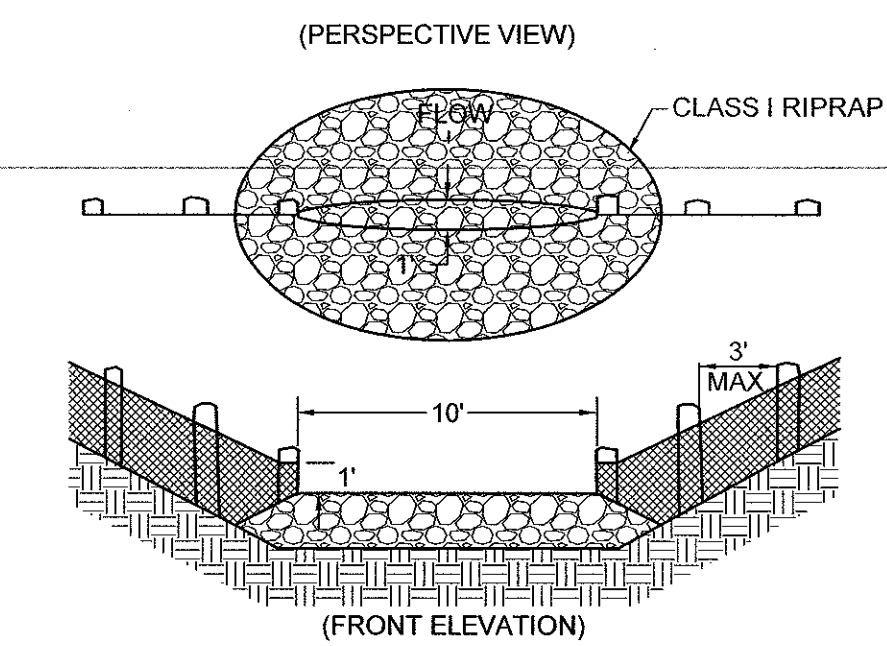
* VIRGINIA EROSION & SEDIMENT CONTROL HANDBOOK
SPECIFICATION NUMBER, THIRD EDITION, 1992.



SILT FENCE CULVERT INLET PROTECTION

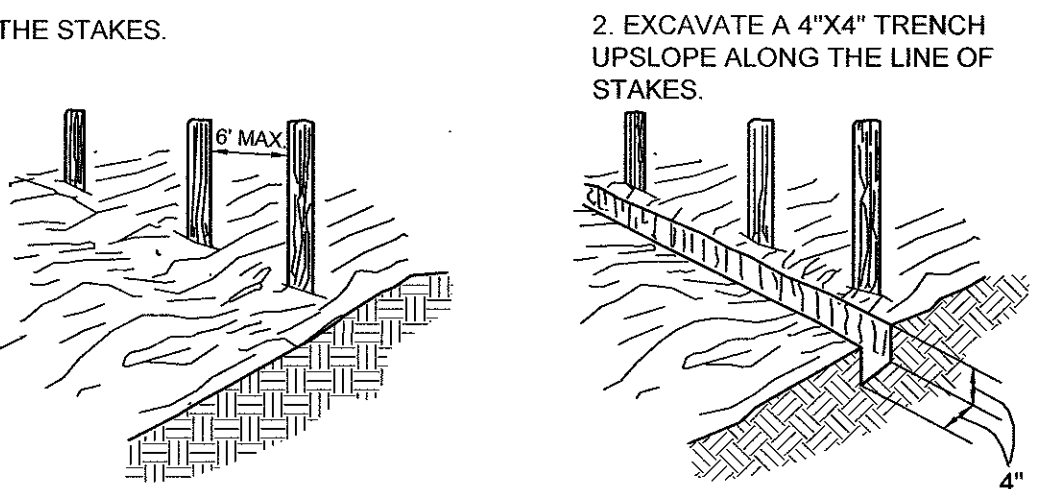
NO SCALE

3.08-1

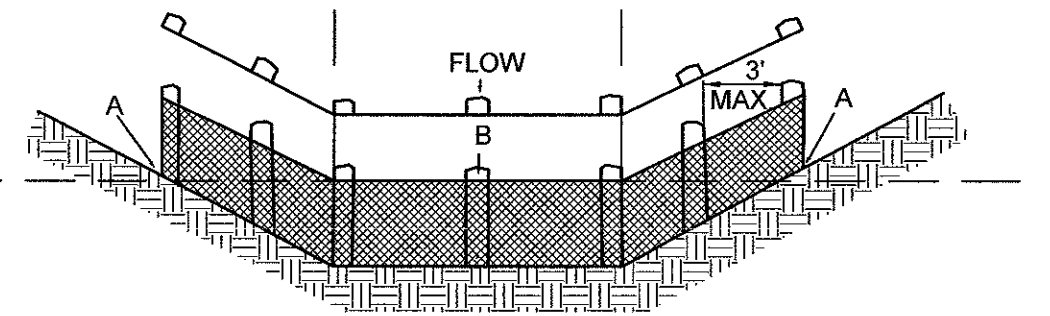


SILT FENCE BREAK DETAIL

NO SCALE



SHEET FLOW INSTALLATION (PERSPECTIVE VIEW)

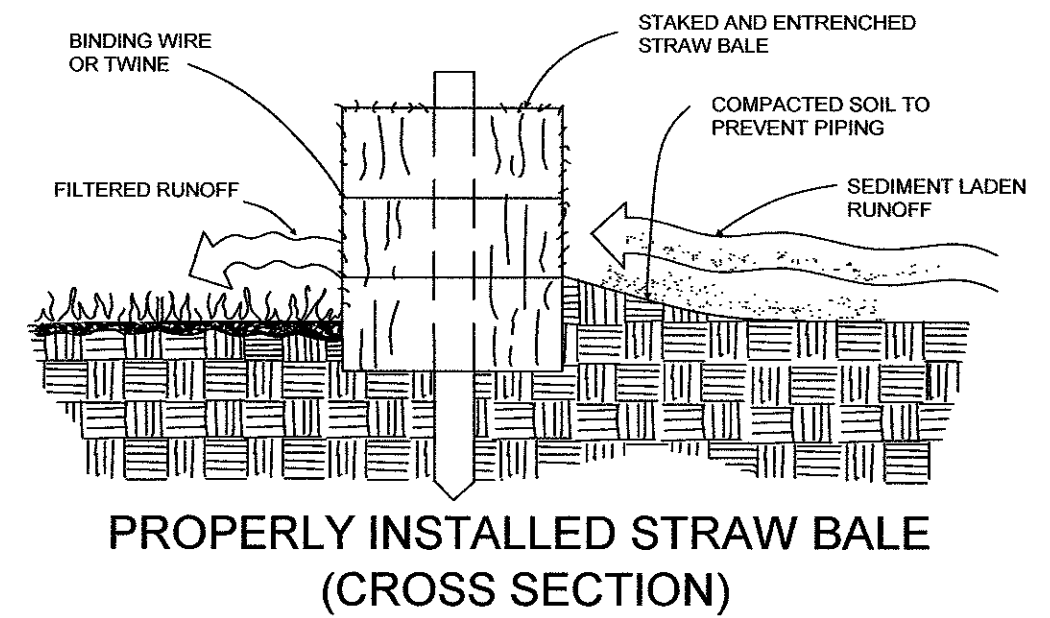


DRAINAGEWAY INSTALLATION (FRONT ELEVATION)

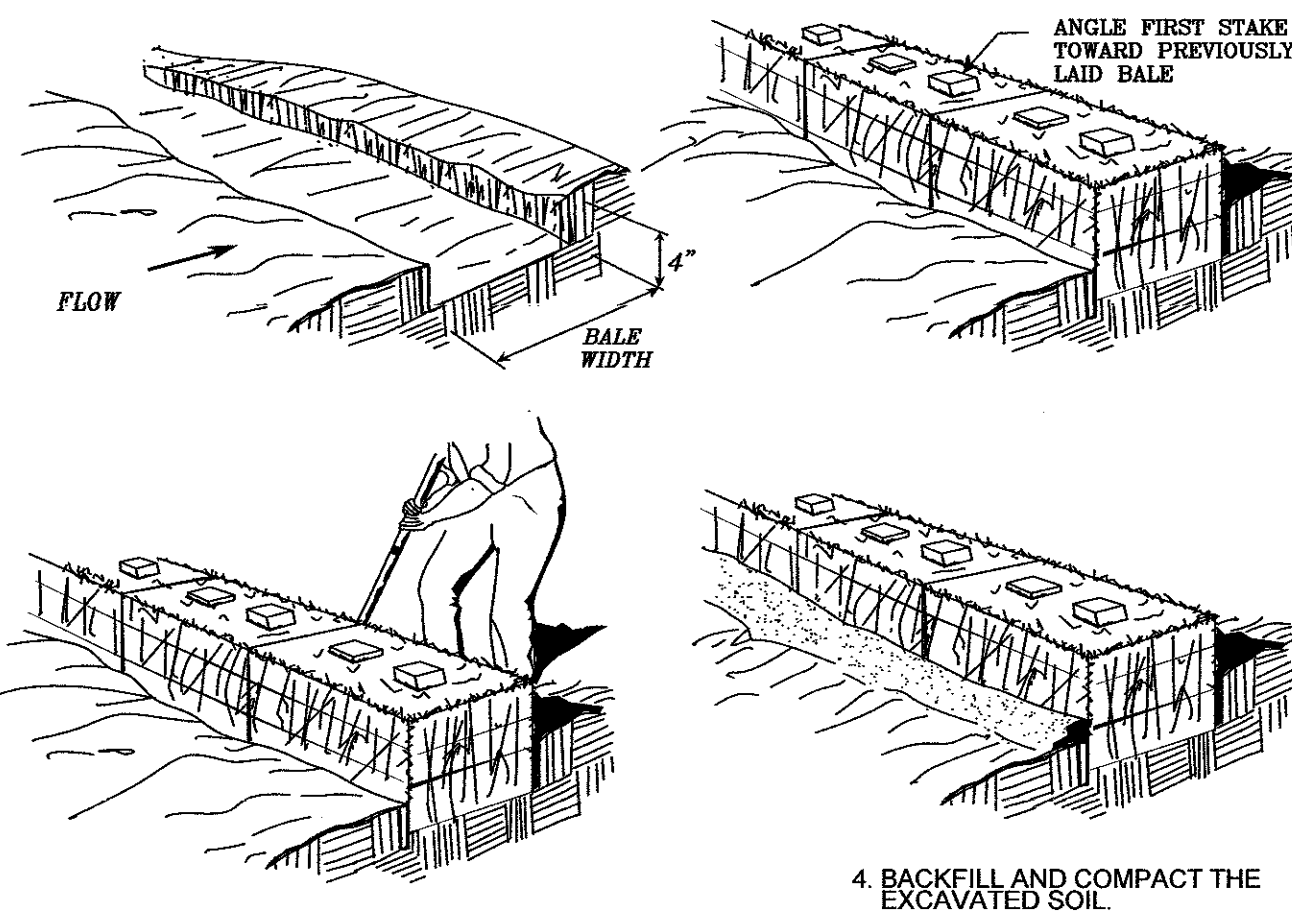
CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)

NO SCALE

3.05-2



1. EXCAVATE THE TRENCH. 2. PLACE AND STAKE STRAW BALES.



3. WEDGE LOOSE STRAW BETWEEN BALES.

CONSTRUCTION OF A STRAW BALE BARRIER

NO SCALE

3.04-1

TIMMONS GROUP
ARCHITECTS
1001 Builders Parkway, Suite 300
Richmond, VA 23225
TEL 804.200-6500
FAX 804.560-1016

mbj ARCHITECTURE
A Professional Limited Company
GROVE PARK SQUARE
11537-B NUCKOLLS ROAD
Glen Allen, Virginia 23059
☎ (804) 273-9811 fax: (804) 273-9843

**RAPPAHANNOCK
COMMUNITY COLLEGE**
CAMPUS RENOVATIONS
WARSAW + GLENN, VIRGINIA
PC: 260-17712

**EROSION AND SEDIMENT CONTROL
NOTES AND DETAILS**

Date: MAY 11, 2010

REVISIONS
NO.
DATE

COMMONWEALTH OF VIRGINIA
WESLEY G. HUNNIUS
Lic. No. 040151
5/1/10
PROFESSIONAL ENGINEER

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